



Lochinvar[®]
High Efficiency Water Heaters, Boilers and Pool Heaters

**KNIGHT
HEATING BOILER
Submission Sheet**

KBN-Sub-08

KNIGHT[®] FLOOR STANDING HEATING BOILERS

JOB NAME _____

LOCATION _____

ARCH./ENGR. _____

WHOLESALER _____

MECH. CONTRACTOR _____

MODEL NO. _____

TYPE GAS _____

Btu/hr INPUT _____

Btu/hr OUTPUT _____

NOTES

SMART SYSTEM[™] FEATURES

- › **SMART SYSTEM Digital Operating Control**
 - › Multi-Color Graphic LCD Display with Navigation Dial and Soft Keys
- › **Three Setpoint Temperature Inputs**
- › **Built-in Cascading Sequencer for up to 8 Boilers**
 - › Cascade Multiple Sized Boilers
 - › Lead Lag
 - › Efficiency Optimization
 - › Front End Loading Capability with Copper Fin II
- › **Outdoor Reset Control with Outdoor Air Sensor**
 - › Programmable for Three Reset Temperature Inputs
- › **Programmable System Efficiency Optimizers**
 - › Night Setback w/Override Function
 - › DHW Night Setback w/Override Function
 - › Anti-Cycling
 - › Outdoor Air Reset Curve
 - › Ramp Delay
 - › Boost Temperature & Time
- › **Three Pump Control**
 - › System Pump with Parameter for Continuous Operation
 - › Boiler Pump with Variable Speed Pump Control*
 - › Domestic Hot Water Pump
- › **Domestic Hot Water Prioritization**
 - › DHW tank piped with priority in the boiler loop
 - › DHW tank piped as a zone in the system with the pumps controlled by the Smart System
 - › DHW Modulation Limiting
 - › Separately Adjustable SH/DHW Switching Times*
- › **Building Management System Integration**
 - › 0-10VDC Input to Control Modulation or Set Point
 - › 0-10VDC Modulation Rate Output
 - › 0-10VDC Input Signal from Variable Speed System Pump*
 - › 0-10VDC Input to Enable/Disable call for heat
- › **High-Voltage Terminal Strip**
 - › 120 VAC / 60 Hertz / 1 Phase Power Supply
 - › Three Sets of Pump Contacts
- › **Low Voltage Terminal Strip**
 - › 24 VAC Device Relay
 - › Proving Switch Contacts
 - › Flow Switch Contacts
 - › Alarm on Any Failure Contacts
 - › Runtime Contacts
 - › DHW Thermostat Contacts

- › 3 Space Heat Thermostat Contacts
- › System Sensor Contacts
- › DHW Tank Sensor Contacts
- › Outdoor Air Sensor Contacts
- › Cascade Contacts
- › 0-10VDC BMS External Control Contact
- › 0-10VDC Boiler Rate Output Contacts
- › 0-10VDC Variable Speed System Pump Signal Input
- › 0-10VDC Signal to Control Variable Speed Boiler Pump
- › Modbus Contacts
- › **Time Clock**
- › **Data Logging**
 - › Hours Running, Space Heating
 - › Hours Running, Domestic Hot Water
 - › Ignition Attempts
 - › Last 10 Lockouts
- › **Access to BMS Settings through Graphic LCD Display**
- › **Maintenance Reminder**
 - › Custom Maintenance Reminder with Contractor Info
 - › Installer Ability to De-activate Service Reminder
- › **Low-Water Flow Safety Control & Indication**
- › **Dual Level Password Security**
- › **Customizable Freeze Protection Parameters**

STANDARD FEATURES

- › **Energy Star[™] Qualified**
- › **96% DOE AFUE Efficiency**
- › **Modulating Burner with 5:1 Turndown**
 - › Direct-Spark Ignition
 - › Low-NOx Operation
 - › Field Convertible from Natural to LP Gas
- › **ASME Stainless Steel Heat Exchanger**
 - › 30 psi ASME Relief Valve
- › **Vertical & Horizontal Direct-Vent**
 - › PVC, CPVC, Polypropylene or SS Venting up to 100 feet
 - › Factory Supplied Sidewall Vent Termination
- › **Smart System Control**
- › **Condensate Trap**
- › **Other Features**
 - › Automatic Reset High Limit
 - › Adjustable High Limit w/Manual Reset
 - › Boiler Circulating Pump
 - › Adjustable Leveling Legs
 - › Zero Clearances to Combustible Materials
 - › 12-Year Limited Warranty (See Warranty for Details)

OPTIONAL EQUIPMENT

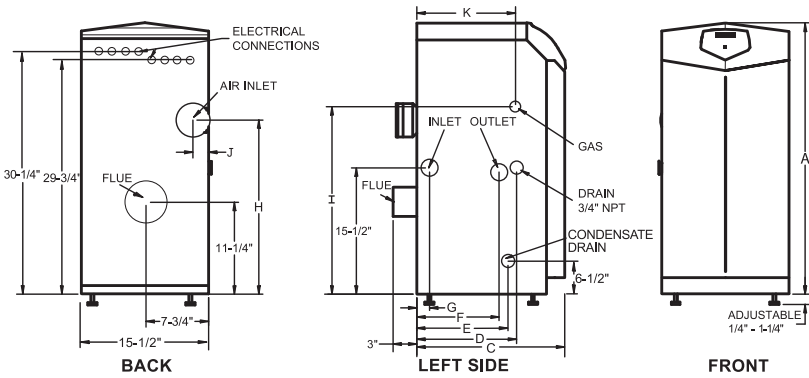
- › Modbus Communication
- › Condensate Neutralization Kit
- › Multi Temperature Loop Control
- › Flow Switch
- › Low-Water Cutoff w/Manual Reset & Test
- › Alarm Bell
- › Concentric Vent Kit
- › SMART SYSTEM PC Software
- › Stack Frame
- › BMS Gateway to LON or BacNet

FIRING CODES

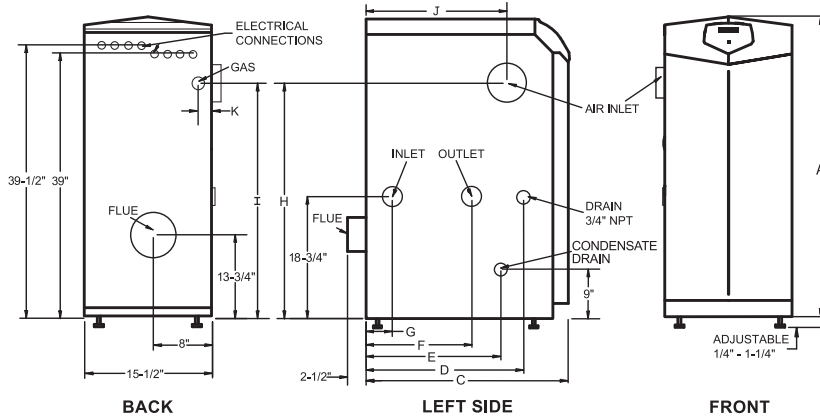
- › M9 Standard Construction
- › M7 California Code

KNIGHT Heating Boiler Dimensions & Specifications

Models:
KBN 081-211



Model:
KBN286



| Model Number | Input Min. MBH | Input Max. MBH | AFUE % | Heating Capacity MBH | NET I=B=R MBH |
|--------------|----------------|----------------|--------|----------------------|---------------|
| KBN081 | 16 | 80 | 96.0 | 73 | 63 |
| KBN106 | 21 | 105 | 96.0 | 95 | 83 |
| KBN151 | 30 | 150 | 96.0 | 136 | 118 |
| KBN211 | 42 | 210 | 96.0 | 191 | 166 |
| KBN286 | 57 | 285 | 96.0 | 259 | 225 |

DIMENSIONS AND SPECIFICATIONS

| A | C | D | E | F | G | H | I | J | K | Gas Conn. | Water Conn. | Air Inlet | Vent Size | Shipping Wt. (lbs.) |
|---------|---------|---------|---------|---------|--------|---------|-----|---------|---------|-----------|-------------|-----------|-----------|---------------------|
| 33-1/4" | 14" | 7" | 5-3/4" | 5" | 3" | 20-1/2" | 22" | 1-3/4" | 6-1/2" | 1/2" | 1" | 3" | 3" | 125 |
| 33-1/4" | 14" | 6-1/2" | 5-3/4" | 4-1/2" | 1-1/2" | 20-1/2" | 22" | 1-3/4" | 6-1/2" | 1/2" | 1" | 3" | 3" | 129 |
| 33-1/4" | 18" | 12-1/4" | 11-1/2" | 10" | 1-1/2" | 21-1/4" | 23" | 1-3/4" | 12" | 1/2" | 1" | 3" | 3" | 157 |
| 33-1/4" | 22-1/4" | 16-1/2" | 15-3/4" | 14-1/4" | 5-1/4" | 21-1/4" | 23" | 1-3/4" | 16-1/4" | 1/2" | 1" | 3" | 3" | 172 |
| 42-1/4" | 19-3/4" | 12-3/4" | 13-1/2" | 6" | 2" | 34" | 31" | 11-3/4" | 4-1/4" | 3/4" | 1-1/4" | 4" | 4" | 224 |

Notes: Indoor installation only. All information subject to change. Change "N" to "L" for LP gas models.
Net ratings based on piping and pick-up allowance of 1.15



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